CLAIMS

1. A serum free medium for cell culture, comprising a base minimum essential medium and

a) one or more growth factors; and

b) one or more sources of lipids and fatty acids.

2. The serum free medium of claim 1, further comprising one or more steroids.

3. The serum free medium of claim 1, further comprising

a) albumin;

b) an iron source;

c) one or more antioxidants;

d) a supplement for coenzyme transport in carboxyl group transfer reactions;

e) trace elements; and

f) vitamins.

4. The serum free medium of claim 1 wherein the growth factor is selected from the group consisting of insulin, FGF-2, PDGFbb, EGF, LIF and SCF and IGF-1.

5. The serum free medium of claim 2 wherein the steroid is dexamethasone.

6. The serum free medium of claim 1 wherein the lipid or fatty acid is cholesterol or linoleic acid.

7. The serum free medium of claim 3 wherein the albumin is human serum albumin.

8. The serum free medium of claim 3 wherein the iron source is transferrin.

9. The serum free medium of claim 8 wherein the iron source is human holo- or apo-transferrin.

10. The serum free medium of claim 3 wherein the antioxidant is β-mercaptoethanol or ascorbic acid.

11. The serum free medium of claim 3 wherein the supplement for coenzyme transport in carboxyl group transfer reactions is biotin.

12. The serum free medium of claim 3 wherein the trace element is selenium.

13. The serum free medium of claim 3 wherein the vitamin is biotin or pantotenate.

14. A composition for the expansion of chondrocytes, comprising FGF-2, a fatty acid source, ascorbic acid, dexamethasone and insulin.

15. A composition for the expansion of chondrocytes, comprising a minimum essential medium and EGF, PDGFbb and FGF-2, ascorbic acid, linoleic acid, human serum albumin (HSA), β-mercaptoethanol, dexamethasone, insulin, human holo- and apo-transferrin.

16. A composition for the maintenance of mesenchymal stem cells, comprising selenium, biotin, sodium pantotenate, LIF, SCF and 1GF-1.

17. A composition for the maintenance of mesenchymal stem cells comprising a minimum essential medium and EGF, PDGFbb, FGF-2, LIF, SCF, IGF-I, ascorbic acid, cholesterol, HSA, β-mercaptoethanol, dexamethasone, human holo- and apo-transferrin, selenium, biotin and sodium pantotenate.

CLAIMS

1. A serum-free composition for the culture of chondrocytes, comprising FGF-2, linoleic acid, ascorbic acid, β-mercaptoethanol, transferrin and dexamethasone.

2. A composition according to claim 1, further comprising EGF, PDGFbb, insulin and albumin.

3. A serum-free composition for the culture of mesenchymal stem cells comprising FGF-2, LIF, SCF, pantotenate, biotin and selenium.

4. A composition according to claim 3, further comprising EGF, PDGFbb, IGF-1, ascorbic acid, cholesterol, albumin, b-mercaptoethanol, dexamethasone, transferrin.

5. A composition according to any preceding claim, further comprising a minimum essential medium.

6. A culture of chondrocytes in a serum-free culture medium containing the composition of claims 1-2.

7. A culture of mesenchymal stem cells in a serum-free culture medium containing the composition of claims 3-4.